

REMARKS/ARGUMENTS

Claims 1-16 remain pending in the instant application.

Rejection under 35 U.S.C. § 103

Claims 1, 3-6, 8-11, 13 and 15-16 are rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 4,164,252 to Scheurecker (“Scheurecker”) in view of U.S. Patent Application Publication No. 2004/0035549 by Eberwein (“Eberwein”). Applicant respectfully traverses the rejection.

Independent claim 1 recites

A strand-guiding roll for supporting and guiding cast metal strands in a continuous casting installation, the roll comprising:
a central rotatable shaft; at least one roll shell supported on and fixed against rotation on the shaft; support rings on the shaft supporting the roll shell;
the shaft, the roll shell and the support rings being shaped to define an annular space which is axially delimited by the support rings and is formed between the shaft and the roll shell;
and
connections to the annular space for the space to be a coolant conduit via the connections.

The Office Action alleges that the features of claim 1 are taught by a proposed combination of Scheurecker and Eberwein. Applicant respectfully disagrees.

Scheurecker teaches a strand guiding roller comprising a central rotatable shaft 1 and a roller body 5 (*sic*, 4) locked to the shaft by each feather key 5. According to Scheurecker, the roller bodies are designed as replaceable wear sleeves (Abstract). The strand-guiding roller is not provided with an internal cooling system. Neither is there any hint or suggestion given to provide an internal cooling system. The Office Action relies upon Scheurecker as showing a duct (15) in bearing housing (14) of bearings (13) through which coolant flows. (Col. 2, lines 49-53) However, the features described explicitly pertain to the bearings, and not to the roller body. The cited features of Scheurecker do not meet the recited feature of claim 1, specifically that “the shaft, the roll shell and the support rings [are] shaped to define an annular space which is axially delimited by the support rings and is formed between the shaft and the roll shell”.

On the other hand, Eberwein concerns a casting roller for the casting of metal strip in the casting gap between two variably spaced parallel and coolable rollers. (See, para. [0001]) This

kind of casting roller is a rotatable mold to bring molten metal to a strand form, and it is not a strand guiding roller as used in a continuous casting machine typically in an area below the casting mold.

The Office Action argues on page 3 that Eberwein teaches the use of an annular space 1c formed between the shaft and the foil shell and delimited by support rings 10, 11 for the purpose of effectively connecting the water feed and discharge fittings on the water clamping plate 14 and cooling the longitudinal channel 2s, 2b between the roll shell 3 and sleeve 2 supported on the shaft 1. This interpretation is not covered by the description and the drawings.

The feature 1c of Eberwein is not an annular space but a radial bore 1c of the shaft 1 as described in paragraph [0023]. Thus, the part 1c cannot be formed between the shaft and the roll shell. Cooling water channels 3a and 2a are formed by axial bores [0023] and they cannot form an annular space as claimed in claim 1. The cooling channel 3a is inside of the roll shell 3 and the cooling channel 2a is inside of the sleeve 2. The cooling channels are not positioned between two adjoining parts.

Eberwein further teaches an annular pressure chamber for regulating the camber or crown profiling the casting roller contour to form a flat strip during the primary casting process. This is a solution far away from cooling equipment. A person of ordinary skill in the art would perhaps have a look to the cooling arrangement described and shown in the publication to Eberwein but he would not taken into account a pressure chamber as an obvious solution to design cooling channels.

Therefore, even presuming that there is some apparent reason to combine Scheurecker and Eberwein as proposed in the office action, their combination does not meet the recited features of claim 1. Even as putatively combined, there is no “annular space which is axially delimited by the support rings and is formed between the shaft and the roll shell”. It is well-settled by the courts that to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Claims 3-6, 8-11, 13 and 15-16 each depend, either directly or indirectly, from independent claim 1, and incorporate its features by reference. These dependent claims are each separately patentable, but in the interest of brevity, they are offered as patentable for at least the same reasons as their underlying independent base claim. Therefore, Applicant respectfully

submits that the rejection has been obviated, and kindly requests favorable reconsideration and withdrawal.

Claims 2, 7, 12 and 14 are rejected under 35 U.S.C. § 103(a) as obvious over Scheurecker in view of Eberwein as applied to claims 1, 3-6, 8-11, 13 and 15-16 above, and further in view of U.S Patent No. 7,165,891 to Giertz ("Giertz"). Applicant respectfully traverses the rejection.

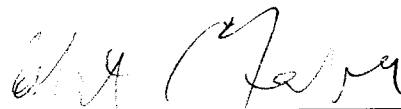
Claims 2, 7, 12 and 14 each depend, either directly or indirectly from independent claim 1, and incorporate the features of claim 1 by reference. Even presuming that Giertz teaches what is attributed to it, and further presuming that there is some apparent reason for one of ordinary skill in the art to combine the references as proposed in the Office Action, the addition of Giertz offers no teaching or suggestion to ameliorate the deficiencies of Scheurecker and Eberwein with respect to underlying independent base claim 1. Specifically, Giertz offers no teaching or suggestion of "an annular space which is axially delimited by the support rings and is formed between the shaft and the roll shell", nor is it alleged to. Therefore, claims 2, 7, 12 and 14 are all patentably distinguished over Scheurecker, Eberwein and Giertz, taken singly or in any combination. Applicant respectfully submits that the rejection has been obviated, and kindly requests favorable reconsideration and withdrawal.

Conclusion

In light of the foregoing, Applicant respectfully submits that all claims are patentable, and kindly solicits an early and favorable Notice of Allowability.

THIS CORRESPONDENCE IS BEING
SUBMITTED ELECTRONICALLY
THROUGH THE PATENT AND
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Respectfully submitted,



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